ECMWF status and plans for AIRS

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- pre-launch schedule
- post-launch schedule
- key science issues

Pre-launch schedule at ECMWF

- By December 2000 - complete initial validation of fast RT model

- By January 2001 - Establish "end-to-end" ingest / monitoring and assimilation of simulated BUFR NRT data

- By February 2001 - Set up dummy monitoring web site and establish best way to provide feedback to NASA / AIRS science team (probably an ongoing activity…)

- By March 2001 - Investigate quality and robustness of NRT EOF data

- By May 2001 (or launch) Define "day-1" channel selection based on pre-launch predicted channel characteristics for real data experiments
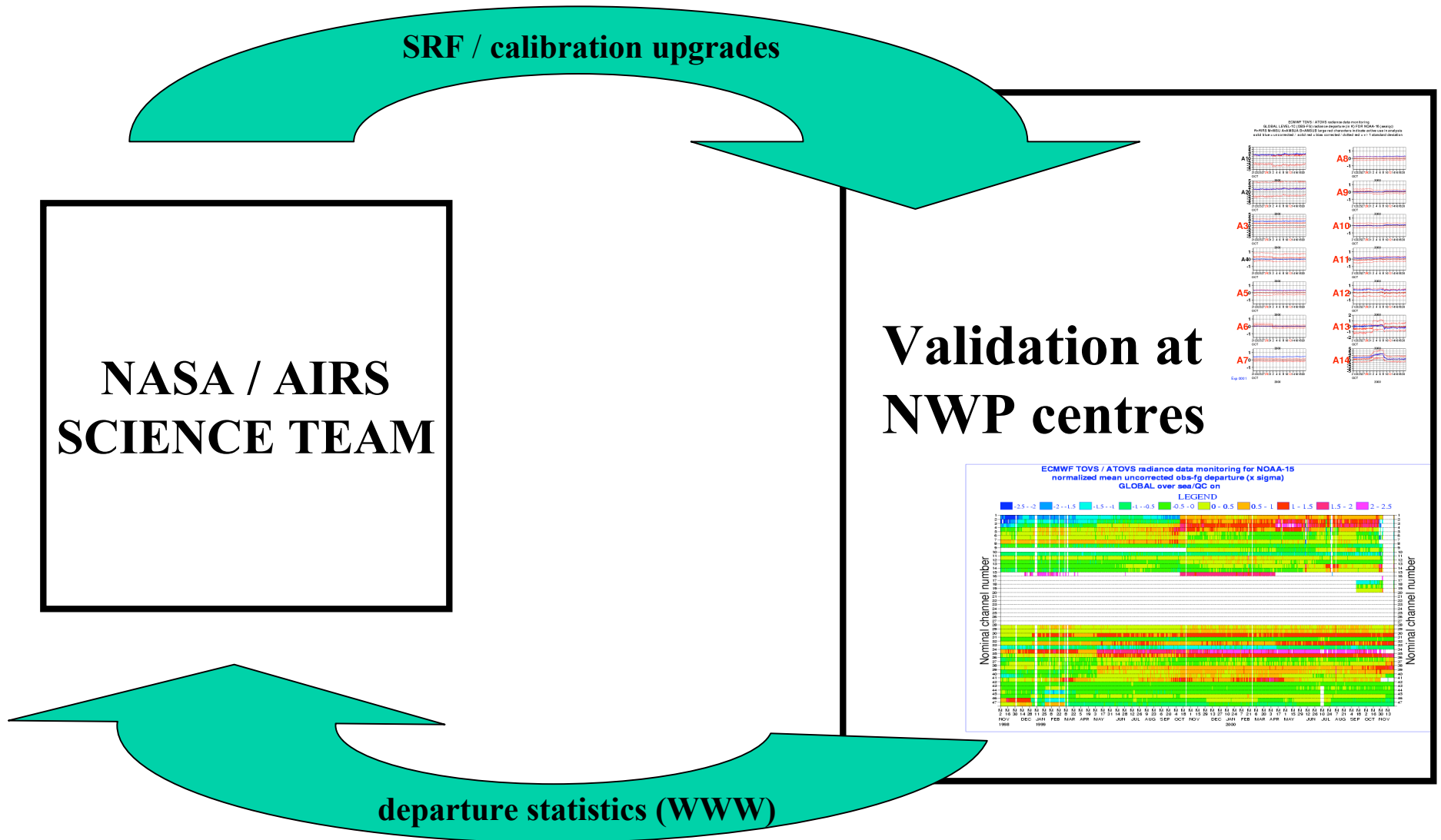
Simulated BUFR NRT radiance data is very important (received since 2000-11-30)

- It allows "end-to-end" technical testing of our NRT monitoring and assimilation systems

- This minimizes technical delays following launch (e.g. recent NOAA-16 implementation was tested pre-launch with simulated data)

- The simulated radiances from "known" cloud conditions will be used to train our cloud detection / estimation algorithms
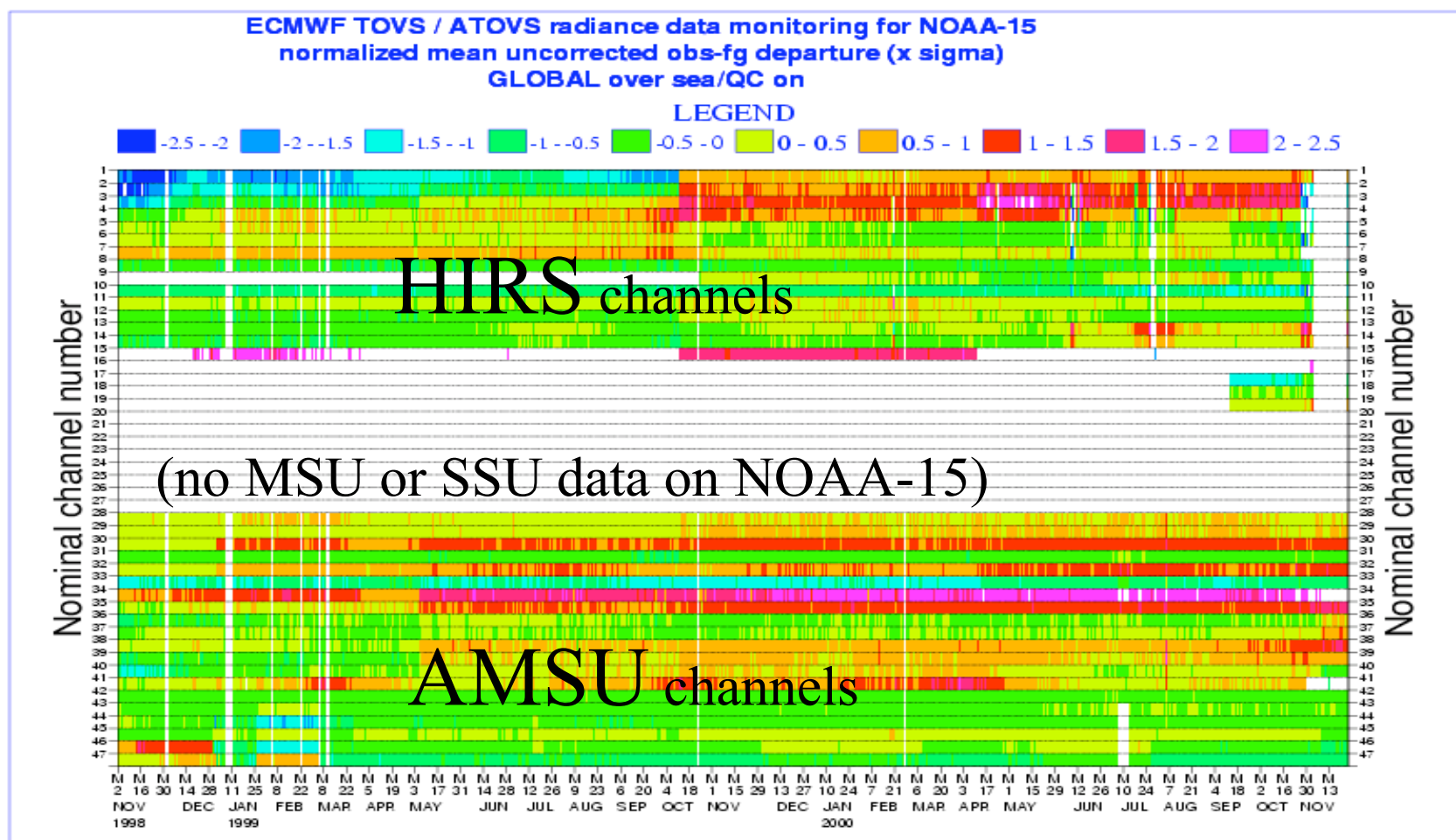
Post-launch schedule at ECMWF

- Replace simulated data with real radiances as soon as available and post results on monitoring web site or (private) ftp server (24hrs)

- respond to intermediate and final upgrades of SRF data (one convolution takes about 2 weeks)

- perform real data impact studies (when SRF are stable) (2 to 3 mnths)

- adapt assimilation / channel selection strategy to changes from pre-launch channel characteristics
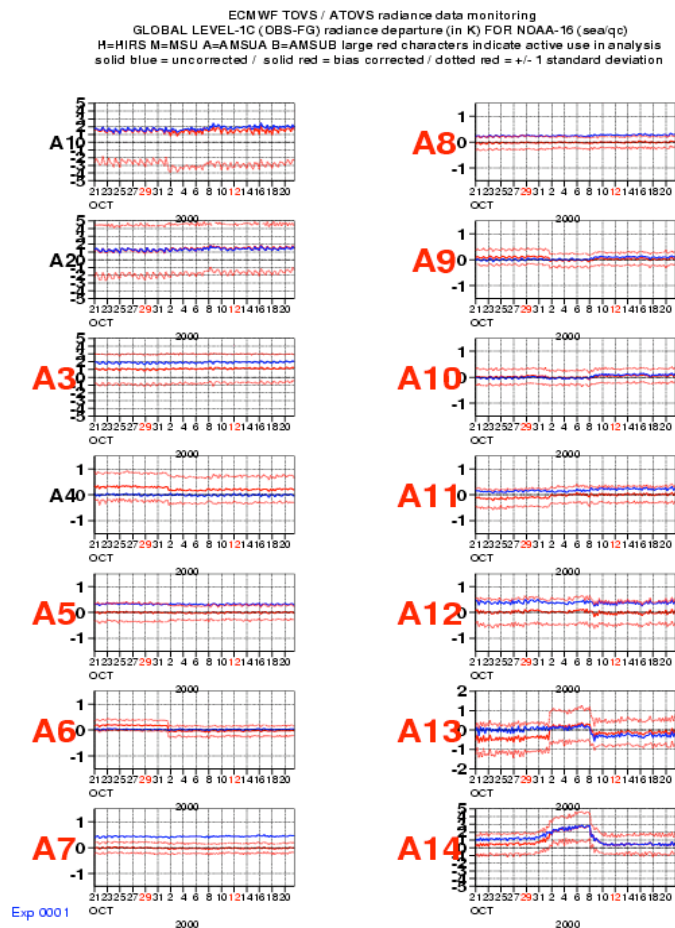
Continuous feedback

NASA / AIRS SCIENCE TEAM

SRF / calibration upgrades

Validation at NWP centres

departure statistics (WWW)

Quick-look monitoring of all AIRS channels (possibly grouped spectrally)

Detailed monitoring of a few key channels

ECMWF TOVS / ATOVS radiance data monitoring
GLOBAL LEVEL-1C (OBS-FG) radiance departure (in K) FOR NOAA-16 (sea/qc)
H=HIRS M=MSU A=AMSUA B=AMSUB large red characters indicate active use in analysis
solid blue = uncorrected / solid red = bias corrected / dotted red = +/- 1 standard deviation

- Example shown is for the AMSUA on NOAA-16

- Very small changes in either the instrument calibration or forward model can be detected

- results available (on www if required) within 12hrs to give quick feedback on changes

Key scientific issues for NWP

- Accurate / stable calibration and SRF characterization

- Accurate and fast radiative transfer model (+adjoint/gradient) for assimilation

- safe and globally robust identification of cloud in the observed radiances

# Fast model reproduction of line-by-line calculations

Fixed Gases

Ozone
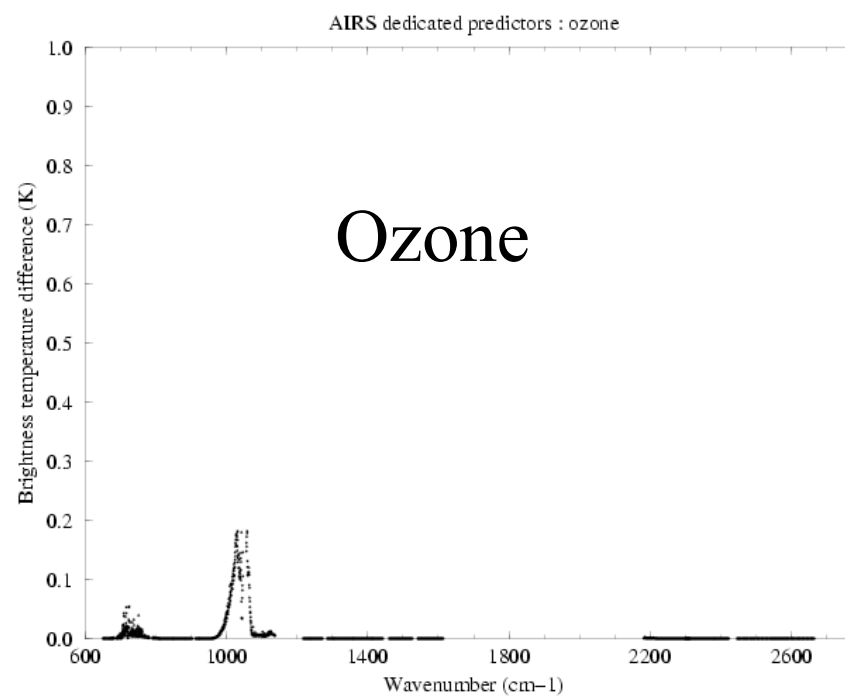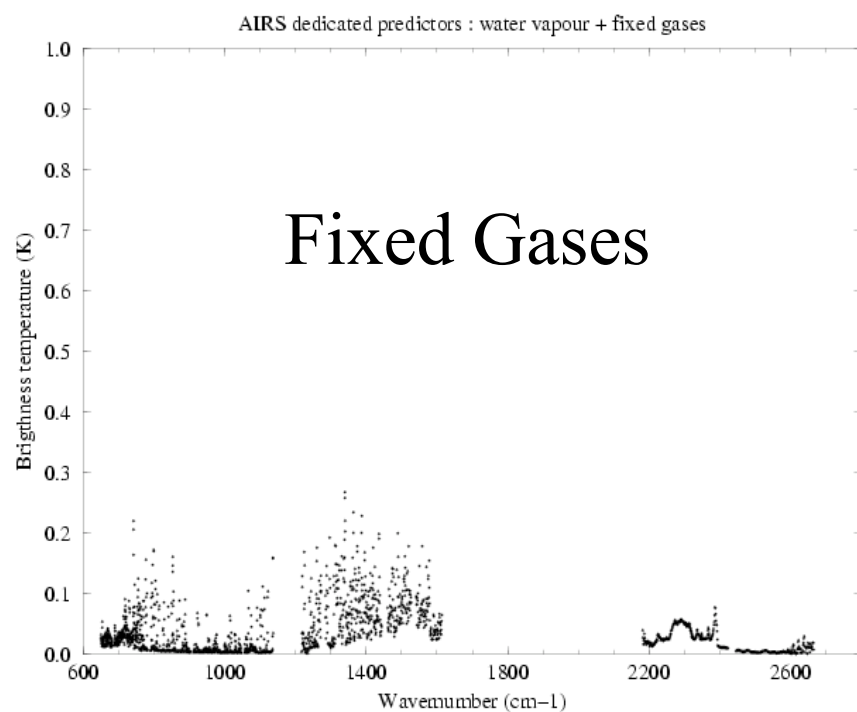
"Realism" of simulated cloudy AIRS radiances

Simulated AIRS-760

Observed HIRS-8
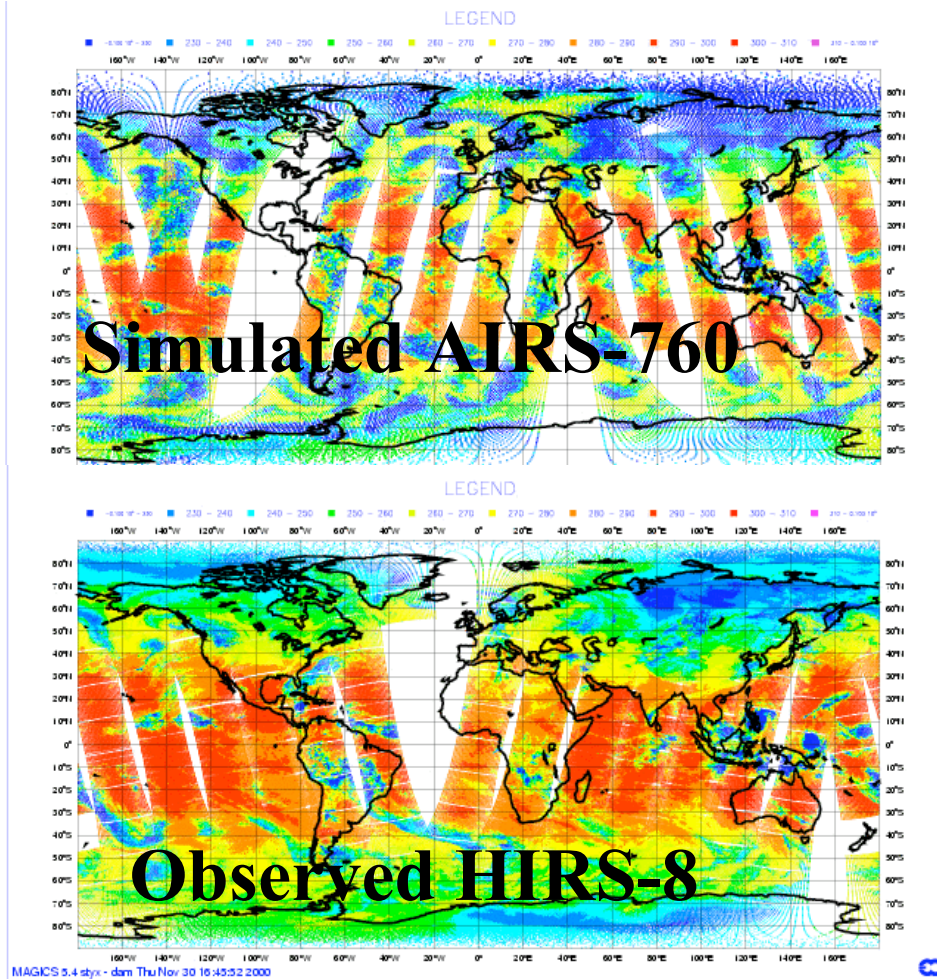
- We need to establish the realism of the implied cloud signal in the simulated radiances

- This will depend on the occurrence of cloud in the NCEP model and the cloud radiative properties assumed in the RT calculations

- This is important so that impact simulations are not too optimistic or too pessimistic

Cloud cover and sensitivity

Average model low cloud cover
in January 2000 (grey > 70%)
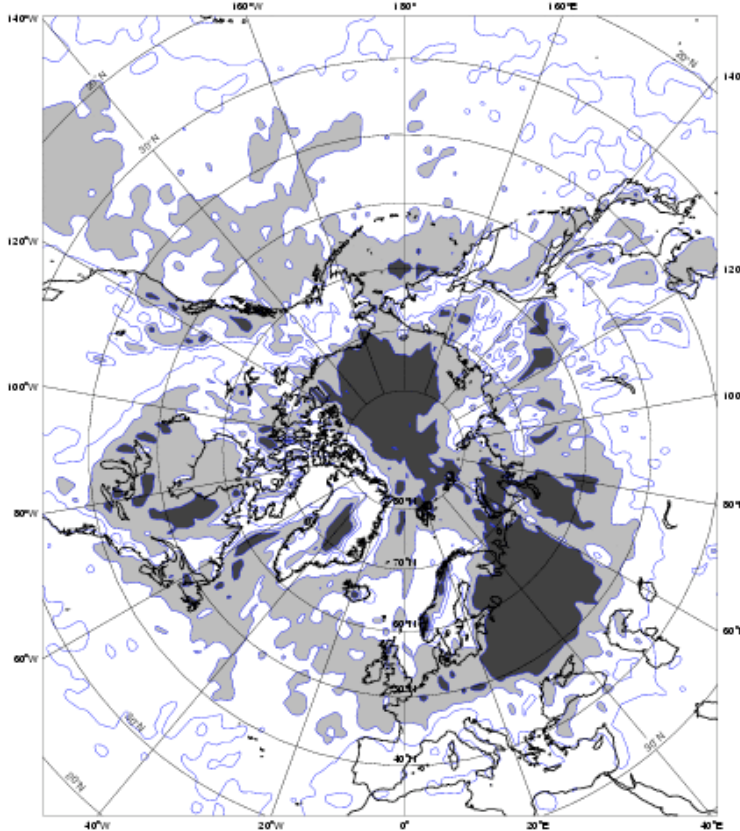
Monthly mean "key"analysis
errors in January 2000